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Aam Slamet Rusydiana

*SMART Indonesia*, [aamsmart@gmail.com](mailto:aamsmart@gmail.com)

Sri Rahardjo

*ITL Trisakti, Indonesia*, [sriahardjosuwito@gmail.com](mailto:sriahardjosuwito@gmail.com)

Wahyu Sugeng Soeparno

*University of Sumatra Utara, Indonesia*, [wahyusugeng@usu.ac.id](mailto:wahyusugeng@usu.ac.id)

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# Mapping Research on Halal Logistics using VoSviewer

Aam Slamet Rusydiana<sup>1</sup>, Sri Rahardjo<sup>2</sup>, Wahyu Sugeng I. Soeparno<sup>3</sup>

<sup>1</sup>Sharia Economics Applied Research and Training (SMART) Indonesia. Email: aamsmart@gmail.com

<sup>2</sup>ITL Trisakti, Indonesia. Email: srirahardjosuwito@gmail.com

<sup>3</sup>University of Sumatera Utara, Indonesia. Email: wahyusugeng@usu.ac.id

## Abstract

*Indonesia is one of the largest Muslim countries in the world. Food and beverage products originating from outside and within the country must be tested for halal. In 2019, the number of companies registering for product testing had increased compared to 2018. The achievement of increasing the number of products and companies is inversely proportional to providing halal product certificates. The decline in the number of recipients of product halal certificates is certainly a major problem in product marketing in areas where most of the population is Muslim. For this reason, the marketing of halal products requires good strategy and management, especially in logistics. The factors that cause halal logistics problems are the low international halal certification, ambiguous halal guidelines, collaboration and coordination finance, low demand, and low standards in measuring cost-effectiveness. This study aims to determine the development of halal logistics research trends published by leading journals on Islamic economics. The data analyzed consisted of 125 Scopus indexed research publications. The data is then processed and analyzed using the VoS viewer application to find out the bibliometric map of the development of halal logistics research.*

**Keywords:** Halal logistics, Bibliometrics, VoS Viewer

## INTRODUCTION

Halal products are food and beverage products suitable for consumption by the Muslim community and are labeled halal in their packaging. In practice, delivering these food and beverage products to consumers requires a good and quality management system. The management system that regulates the distribution and storage of these products is known as the halal logistics system. Halal logistics plays a role in managing and distributing finished goods from producers to customers in the supply chain. Ensure that the ordered goods have arrived at the customer. Customers who are dissatisfied with the performance of the service industry in distributing their orders can reduce the quality of service industry services (Thoyyibah, 2019).

The halal logistics system is part of supply chain management in the halal food industry. Globally, the highest halal food product in marketing and sales is halal meat, with a percentage of 47.79% in 2019 and is expected to increase in 2030 with a percentage of more than 80%. Halal products with a low level of marketing are halal vegetables and fruits, with a percentage below 40% and halal milk is the fastest growing product in sales (Nkwood, 2020).

Indonesia is one of the largest Muslim countries in the world. Food and beverage products originating from outside and within the country must be tested for halal. Halal testing of food and beverages is carried out by MUI (Indonesian Ulema Council) through LPPOM (Institute for Food, Drugs and Cosmetics Testing of the Indonesian Ulema Council). In 2019, the number of companies registered for product testing was 13,951 companies and an increase compared to 2018 of 11,249 companies. Then the number of products tested in 2019 was 274,796 products. When compared to 2018, this number has increased by 204,222 products. The achievement of increasing the number of products and companies is inversely proportional to providing halal product certificates. The number of halal certificates granted in 2019 decreased compared to 2018, from 17,398 to 15,495 halal certificates (LPPOM, 2020).

The decline in the number of recipients of product halal certificates is certainly a major problem in product marketing in areas where most of the population is Muslim. The absence of halal labels on marketed products can harm the profits or income of companies that market their products. It is known that the Asia Pacific is a large share in the marketing of these halal products. For this reason, the marketing of halal products requires good strategy and management, especially in logistics. The factors that cause halal logistics problems are the low international halal certification, ambiguous halal guidelines, collaboration and coordination finance, low demand, and low standards in measuring cost-effectiveness (Zailani et al., 2018). This challenge or problem motivates the government to provide quality halal logistics services and provide standardization in product delivery to consumers.

## **LITERATURE REVIEW**

Halal logistics is a physical activity of storing and shipping goods equipped with information and directed communication between related parties and the supply chain flow by applying the halal concept in it (Rohana et al., 2012). The basic concept of general logistics and halal logistics is the same. The difference is that halal logistics is carried out by ensuring that the processes in the supply chain separate halal cargo from non-halal cargo. This case also includes the logistics process or tracking. Jaafar et al. develop the concept of halal logistics based on the integrity of halal products. In this concept, the integrity of halal products is influenced by two factors, namely, the feasibility of product segregation (proper segregation) and the logistics system (Jaafar et al., 2013).

Product aggregation is a process of controlling, packing, transporting, and storing halal products. The integrity of halal products, product aggregation, and a good logistics system are components in forming halal logistics so that marketed products can be consumed and not mixed with non-halal products. Mutually agreed principles support this concept in halal logistics, namely defining cross-contamination between halal and haram and avoiding it, creating an evolution of supply value, creating a system in halal logistics, and minimizing difficulties in the halal industry, conducting comparative studies on halal logistics. Existing halal logistics system, as well as international standardization (Tieman, 2013).

Three principles underlie the formation of halal logistics, namely: avoiding contamination, avoiding mistakes, and ensuring that logistics operations are consistent with the halal concept (Bruil, 2010). This needs to be done to avoid cross-contamination and ensure that the production logistics system is guaranteed halal. Therefore, halal logistics can be stated as applying the halal concept throughout supply chain activities from suppliers, manufacturing, warehousing, transportation, and product distribution to ensure the halal status of a product. If this is done, it will produce halal logistics output according to the customer's desired standards.

For business expansion, this is one of the things that can be used as a potential for companies to provide superior value for consumers; namely, companies can ensure and provide halal guarantees for the entire supply chain process. This halal supply chain guarantee will certainly be a lucrative business for the industry if used properly, considering that the Indonesian people are predominantly Muslim. The awareness of the Muslim community towards halal is growing. As a country with the largest Muslim population globally, halal is an issue and demand for some. big consumers in Indonesia.

## **RESEARCH METHODS**

This study uses data on paper publications sourced from various journals from 2011-2021 with research on halal logistics themed. Data collection was carried out through searching articles indexed by the Google Scholar database. The search was carried out by typing the keyword 'halal logistics,' then selected papers relevant to the theme of halal logistics research for journal criteria that were filtered and processed in software indexed by Google Scholar only journals equipped with DOI. From the search results, there are 125 articles published from 2011-2021. The data in the form of topics used to publish halal logistics-themed papers were

analyzed using Microsoft Excel 2010. The trend of publication developments on the halal logistics theme was analyzed using VOSViewer software.

The computer program that was introduced was called VOSviewer. VOSviewer is a program developed for creating and viewing bibliometric maps. This program is available free of charge to the bibliometric research community (see [www.vosviewer.com](http://www.vosviewer.com)). VOSviewer can create author maps or journals based on co-citation data or create keyword maps based on shared incident data. The program offers a viewer that allows bibliometric maps to be examined in detail.

To build the map, VOSviewer uses the VOS mapping technique, where VOS stands for visualization similarity. For previous studies where the VOS mapping technique was used, VOSviewer can display maps constructed using appropriate mapping techniques. Therefore, this program can display maps built using the VOS mapping technique and display maps built using multidimensional scaling techniques. VOSviewer runs on many hardware and operating system platforms and can be started directly from the internet.

## RESULTS AND DISCUSSION

The following is a table that shows the collection of documents used in research with the theme of halal logistics in Islamic economic research. Of the total 125 documents used, they are divided into 4 types of documents, including journal articles (82 documents), anthology/book chapters (3 documents), Conference Papers (32 documents), and Reviews (8 documents).

**Table 1:** Document Types

No	Document Types	Number of Articles
1	Journal article	82
2	Book chapter	3
3	Conference Paper	32
4	Review	8
	<b>TOTAL</b>	125

Based on the results of grouping the types of documents above, the type of document most widely used as research subjects with the theme of halal logistics is documents in the form of book chapters with a percentage of 65.6% or as many as 92 documents. Meanwhile, the least used documents are in the form of a review of 2.4% or as many as 3 documents. This shows that the references used are quite valid because most of them come from documents in scientific journals.

### Bibliometric Graph Analysis

Bibliometrics is based on the calculation and statistical analysis of scientific outputs in articles, publications, citations, patents, and other more complex indicators. It is an important tool in evaluating research, laboratory and scientist activities and scientific specialization, and country performance. After establishing the background for bibliometric development, the

report presents the database from which the bibliometric was created and the main indicators used.

To explore the meta-analysis results, this section will present a visual mapping chart from 125 journals published by halal logistics. The results of the keyword mapping analysis become the basis for mapping together important or unique terms contained in certain articles. Mapping is a process that enables one to recognize elements of knowledge and their configuration, dynamics, interdependencies, and interactions.

Related to bibliometrics, science mapping is a method of visualizing the field of science. This visualization is done by making a landscape map that can display topics from science (Royani et al., 2013). The results of network visualization from 125-word map journals with the theme of halal logistics can be seen:

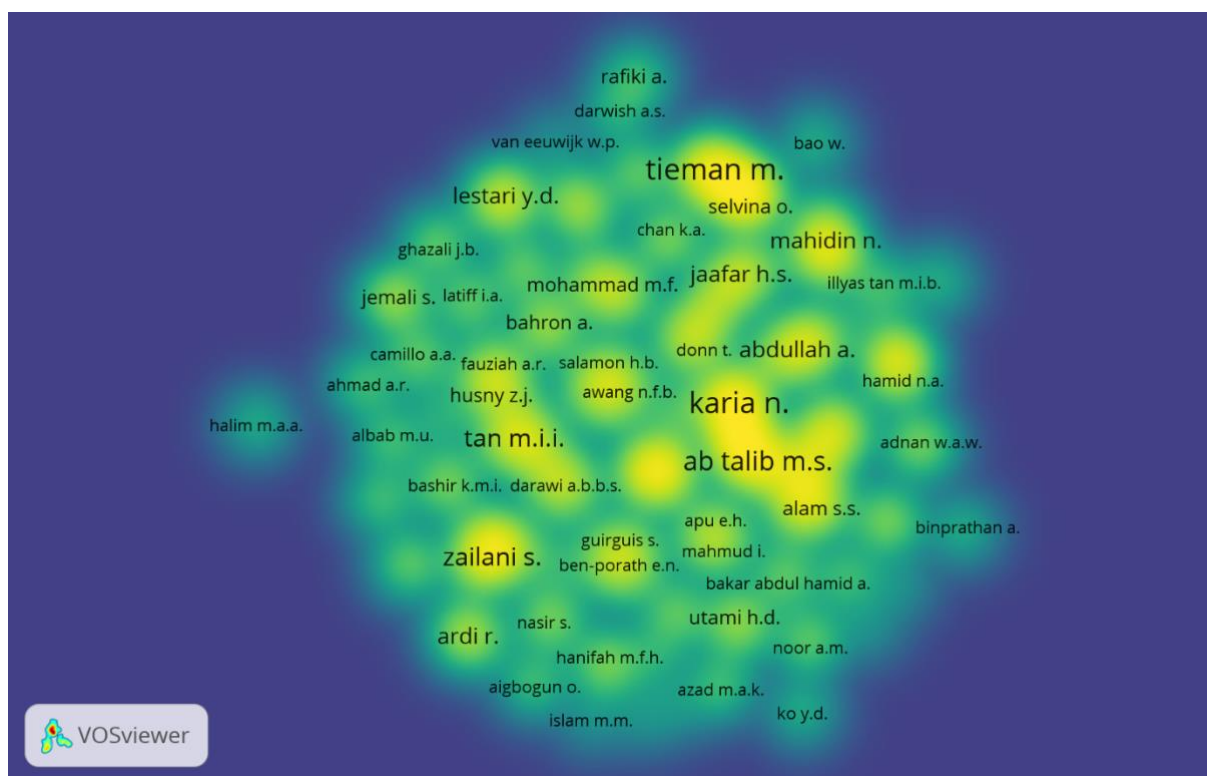
### Co-Authorship Analysis

Furthermore, the bibliometric results will be displayed based on the sub-themes, namely authors, organizations, and countries.

#### 1. Co-authorship Authors

Using the VOSViewer software, we found the author's bibliometric mapping, as shown in the following figure. The bigger the shape and the brighter the color indicates, the author is publishing more and more related halal logistics.

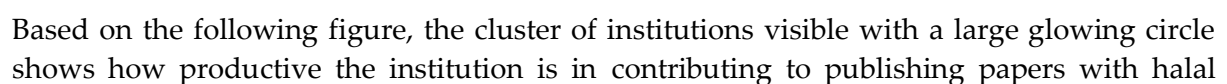
**Figure 1:** Co-authorship Authors



In general, each researcher has different tendencies. Some writers are indexed as a single author, others co-author with other researchers so that multiple clusters appear, which are indicated with different densities. However, the authors with a fairly large density indicate that they publish more research on halal logistics themes than those with a lower density, so this result can be used to reference future researchers.

## 2. Co-authorship Institution (Co-citation)

**Figure 2: Co-authorship Institution (Co-citation)**



logistics. The largest number of institutions is calculated from the number of publications and links to other institutions, where an author can write many papers in different journals.

The most popular institutions are calculated based on the number of publications and links to other institutions, where a paper writer can write many papers in different journals. The most well-known ranking of institutions shown by the results of bibliometric mapping is UTM International Business School, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia.

### 3. Co-authorship Country

Furthermore, the visualization of the journal publisher mapping is illustrated in the bibliometric image of the journal source below. Based on the picture, it can be seen that some of the country clusters appear to publish the most articles with the theme of halal logistics.

**Figure 3:** Co-authorship Country



Based on the picture above, the larger the circle of the publishing country, the more papers that country publishes. Seen that the country of Malaysia has the brightest light. This means that Malaysia publishes the most halal logistics-themed papers compared to other countries.

### Co-occurrence Analysis

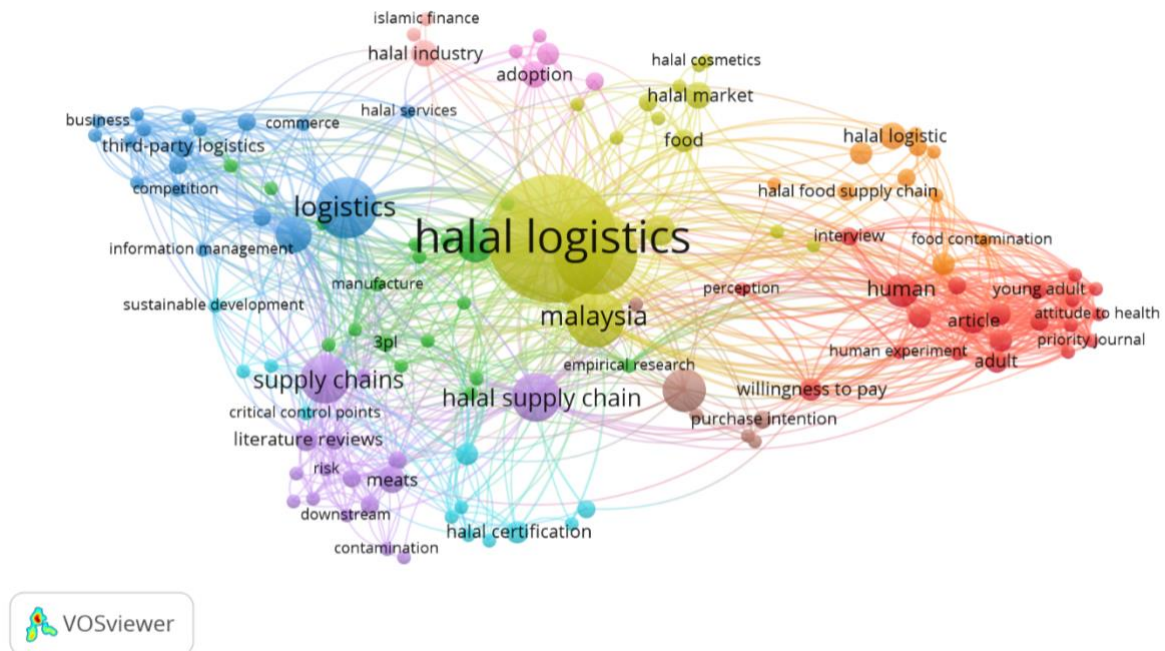
Furthermore, the bibliometric results will be displayed based on the sub-themes, namely all keywords, author keywords, and index keywords.

#### 1. Co-occurrence All Key Word



VOSViewer can also find the bibliometric mapping of the most used keywords in halal logistics themes related to Islamic economics. The bibliometric mapping of the keywords used can be seen in the image below. Keywords that have a larger form indicate that the word is used more in journals related to halal logistics.

**Figure 4:** Co-occurrence All Key Word



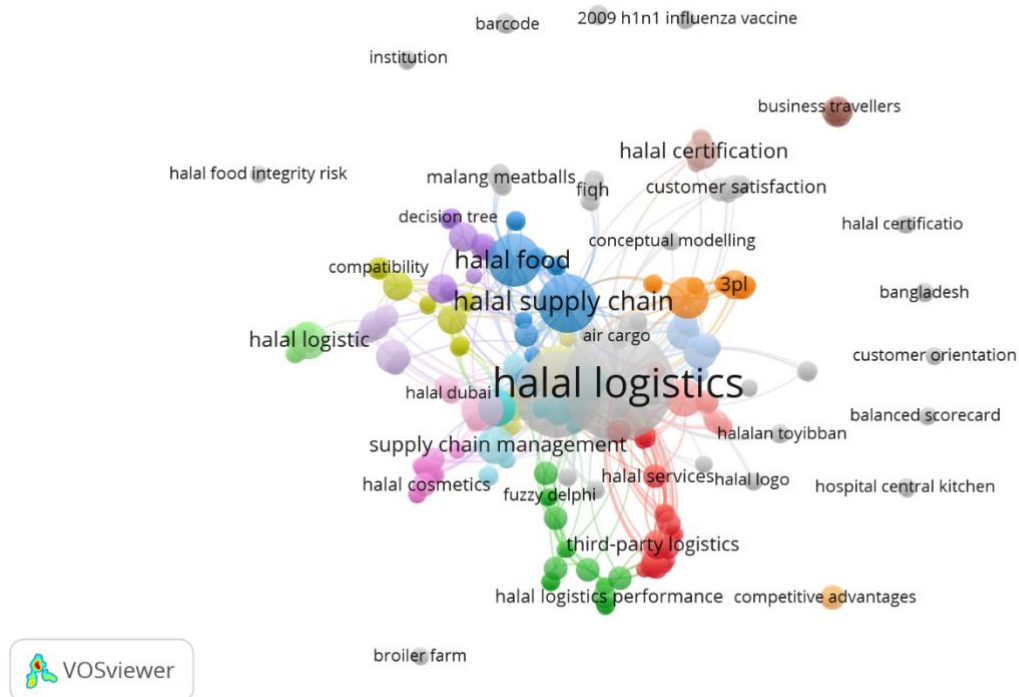
This data can be used to find out the trend of keywords in recent times. The bibliometric analysis shows several widely used keywords in the paper that are the object of research. The more keywords that appear, the wider the circle indication will be. While the line relationship between keywords shows how much they are related to other keywords.

Based on the analysis results using VOSviewer on keywords with the theme of halal logistics, there are many clusters and are interrelated with other keywords. Keywords that have the same color indicate a very close relationship. The most widely used keyword in halal logistics-themed journals is Halal Logistics.

## 2. Co-occurrence Authors Key Word

VOSViewer can also find a bibliometric mapping of keywords that authors most use in halal logistics themes related to Islamic economics. The bibliometric mapping of the keywords used can be seen in the image below. Keywords with a larger form indicate that the word is used more by authors in journals related to halal logistics.

**Figure 5: Co-occurrence Authors Key Word**

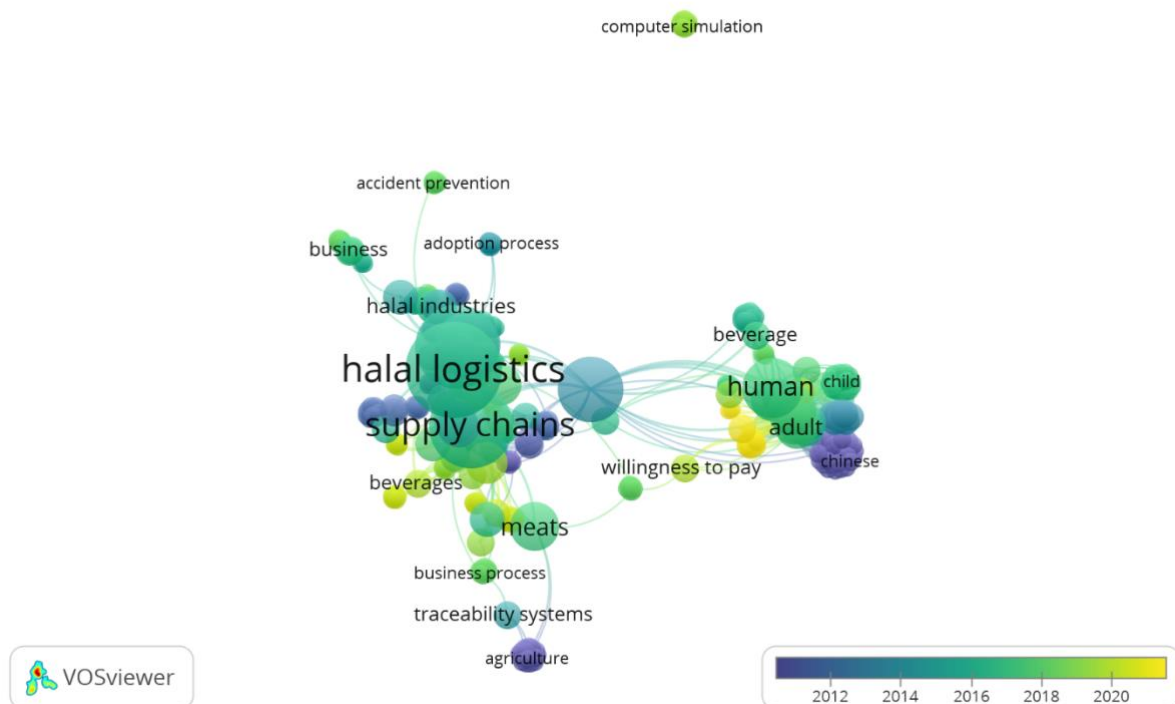


Based on the analysis results using VOSviewer on keywords that authors widely use in journals with the theme of halal logistics, there are many clusters and are interrelated with other keywords. Keywords that have the same color indicate a very close relationship. The most widely used keyword by the author is Halal Logistics.

### 3. Co-occurrence Index

Then, this study also obtained results in the form of an index that is often used by the author and is interrelated in the theme of halal logistics related to Islamic economics, as shown in the image below. An index that has the same color indicates a very close relationship.

**Figure 6:** Co-occurrence Index



Based on the results obtained, the lighter the color, the more recent the index is used. In the word index paper with the theme of halal logistics related to Islamic economics, there are some of the most widely used words, namely Halal Logistics.

Logistics is the management of the flow of goods moving from a point of origin to the point of consumption to meet certain demands, for example directed to consumers or companies. Logistics is the process of planning, implementing and controlling the efficient, effective flow and storage of goods and services, and all related information from a point of origin to a point of consumption in order to meet customer needs. This definition includes inbound, outbound, internal and external movement, and return of materials.

The role of logistics has now expanded beyond just moving finished products and materials, but also creating a competitive advantage by providing services that meet consumer demands. Having competitive logistics services is very important for Indonesia in an effort to build national and international connectivity (Salim, 2015). The logistics services sector is a vital sector because of its role in distributing goods and services, starting from raw materials, production processes, marketing, until these goods and services reach the hands of consumers.

From the point of physical distribution or logistics, customer service is the ability of the channel system to satisfy customer needs, which is based on the 7 (seven) R's, which include right quantity, right quality, right price, right product, right time, right customer, right place. In logistics science there are 5 (five) characteristics of logistics activities which include: procurement, warehousing, distribution and delivery, transportation and inventory, where in handling or managing halal logistics must meet the provisions of Sharia or Sharia compliance.

Various kinds of documents are needed in handling this halal logistics, namely: Shipping Instruction is a shipping order document from the shipping company; Cargo Manifest or list of all cargo that must be loaded on board, complete with quantity, brand or other signs deemed necessary; Daily Working Report in the form of loading and unloading reports for one working day; balance/remaining unloading/loading after the ship is docked; Ship Arrival Notification or planned arrival of transportation means; and Ship Arrival Plan and Operation Planning (RPKOP), where the document is made by the shipping company agent for booking.

Based on the results of mapping using the bibliometric method with the topic of 'halal logistics', the following is a summary that includes the main author, the most important keywords and the institution with the highest publications on this topic.

Rank	Authors	Keyword Occurrence by	An institution with The Highest Publication
1.	Tieman M	Halal Logistics	UTM International Business School, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia.
2.	Karia N	Halal	Faculty of Business and Accountancy, University of Malaya, Kuala Lumpur, Malaysia
3.	Ab Talib M.S	Logistic	Universiti Teknologi Malaysia, Johor Bahru, Malaysia
4.	Asaari M.H.A.H	Halal Supply Chain	Department of Mechanical Engineering, Faculty of Engineering and Technology, Jamia Millia Islamia, New Delhi, 110025, India
5.	Jati S	Supply Chains	Faculty of Management, Universiti Teknologi Malaysia, Johor, Malaysia
6.	Susanty A	Halal Food	Graduate School of Business, Universiti Sains Malaysia, Penang, Malaysia
7.	Hamid A.B.A	Supply Chain Management	Faculty of Business, Economics and Accountancy, Universiti Malaysia Sabah, Kota Kinabalu, Malaysia
8.	Ali M.H	Outsourcing	Faculty of Food Science and Nutrition, Universiti Malaysia Sabah, Kota Kinabalu, Malaysia
9.	Masudin I	Human	Faculty of Business Management, UITM, Shah Alam, Malaysia
10.	Zailani S	Halal Supply Chain Management	Malaysia Institute of Transport (Mitrans), Shah Ala, Malaysia

## CONCLUSION

This research aims to try to find out the extent of the development of Islamic finance to find out how many journals are written with the theme of halal logistics. The study results indicate that there has been an increase in the number of published articles with the theme of halal

logistics since 20011. Halal logistics research has been carried out in various countries. An increase in the score of halal logistics in a country will be positively related to economic growth in that country, making economists do a lot of research related to halal logistics. Based on research using the bibliometric method, it was found that Tieman M wrote the most about halal logistics. The institution that publishes the most papers related to halal logistics is UTM International Business School, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia. And the country that publishes the most papers related to halal logistics in Malaysia. For the index, all the keywords and keywords most used by authors in index-themed journals are Halal Logistics.

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